REMARKS

Upon entry of this amendment, which amends claims 1, 8, 10, 21, and 24-26, cancels claims 2, 7, 14-20, 22, and 23, and adds claims 37-44, claims 1, 3-6, 8-13, 21, and 24-36 remain pending, and claims 37-44 are presented for examination. Claims 31-36 were withdrawn by the Examiner as being drawn to a non-elected invention. Claims 1, 2, 4-7, 10, 13-15,17, 18, and 20 were rejected under 35 U.S.C. §102(e) as being anticipated by Levin et al., U.S. Patent No. 6,154,201. Claims 3, 8, 9, 11, 12, 16, 19, and 21-30 were rejected under 35 U.S.C. §103(a) as being unpatentable over Levin in view of various combinations of Ogata et al., U.S. Patent No. 6,001,014; Yavetz, U.S. Patent No. 4,938,483; Orton et al., U.S. Patent No. 5,216,337; and Helbing, U.S. Patent No. 6,241,574.

Reconsideration in view of the foregoing amendments and following remarks is respectfully requested.

Attached hereto is a "Version with Markings to Show Changes Made," indicating the changes that were made in the claims.

Response to restriction requirement

A restriction requirement was made between claims 1-30, drawn to a haptic feedback remote control device, and claims 31-36, drawn to a method for controlling a device. The Office Action asserts that the inventions are distinct because the product claimed in claims 1-30 could be used in a process that "does not require the method step of causing haptic sensations to be output on the remote control unit," and such a process would be materially different from the process claimed in claims 31-36. Applicant does not deny that an embodiment of the claimed device could be used with its haptic feedback features disabled. Applicant respectfully submits, however, that the mere possibility of disabling the claimed haptic feedback features of the remote control device

is not sufficient to establish that the device is a distinct invention from a process of using that device in which its haptic feedback features are not disabled.

Applicant therefore traverses the restriction requirement, requests reconsideration, and elects claims 1-30 for prosecution.

Rejections of Claims

Pending claims 1, 4-6, 10, and 13 were rejected under 35 U.S.C. §102(e) as being anticipated by Levin et al., U.S. Patent No. 6,154,201. Pending claims 3 and 21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Levin in view of Ogata et al., U.S. Patent No. 6,001,014. Claims 8, 9, 12, and 25-29 were rejected under 35 U.S.C. §103(a) as being unpatentable over Levin in view of Yavetz, U.S. Patent No. 4,938,483. Claim 11 was rejected under 35 U.S.C. §103(a) as being unpatentable over Levin in view of Orton et al., U.S. Patent No. 5,216,337. Claim 24 was rejected under 35 U.S.C. §103(a) as being unpatentable over Levin in view of Ogata (as applied to claim 21) and further in view of Yavetz. Applicant respectfully traverses these rejections.

The Claims

The present invention relates to a haptic feedback remote control device. As recited in amended claim 1, in addition to a control for manipulation by a user, the device includes an actuator that outputs forces on the housing or control of the device in response to actuator signals. As amended, claim 1 recites that the device also includes a controller that determines the actuator signals "based at least in part on a state of said toy device." The state of the toy device may be, e.g., inferred from one or more manipulations of the control(s) (as recited in new claim 37) or determined from state information received from the toy device (as recited in new claim 38). Each of the other independent device claims — claims 21 and 25 — has also been amended to recite that actuator signals are determined based at least in part on a state of the toy device. Each of

the remaining claims depend from one of claims 1, 21, and 25, and therefore also includes this feature.

The Cited Art Distinguished

Applicant respectfully submits that neither Levin nor a combination of Levin with any of the secondary references discloses or suggests a haptic feedback remote control device that includes a controller that determines signals for controlling an actuator to produce haptic sensations based on a state of the device being controlled.

Levin is directed to a control knob that a user may move in one or more degrees of freedom to control different features of a device (e.g., a stereo system). An actuator is provided for generating force sensations on the knob. "In force feedback embodiments, the microprocessor 202 reads sensor signals and can calculate appropriate forces from those sensor signals, time signals, and force processes selected in accordance with a host command, and output appropriate control signals to an actuator" (col. 19, lines 56-60). The sensors disclosed in Levin are for detecting motion of the control knob (see col. 20, lines 47-52), not for detecting the state of the device being controlled. Therefore, Levin does not teach a controller that determines actuator signals based at least in part on a state of the controlled device, as recited in independent claims 1, 21, and 25.

Ogata is directed to a user-operated control device for a game machine, such as a video game system. To produce bodily sensations, the control device includes a motor that produces vibrations of the control device (col. 6, lines 14-24). However, Ogata teaches that the signals that control operation of the motor are generated in the game machine, not in the control device. The game machine sends to the controller "dynamic transmission data [that] contains a control signal for voltage and current for driving the motor ... and duration for driving the motor" (col. 8, lines 36-39). That is, the control device does not receive any information about the state of the game machine. Therefore, Ogata does not teach or suggest that the control device determines the actuator signals based in any way on the state of the game machine being controlled.

The other references — Orton, Yavetz, and Helbing — do not teach haptic feedback devices. Orton is directed to providing an audible feedback signal from a speed controller of a radio-controlled device. The speed controller is mounted on the controlled device, not on a remote control unit (see col. 3, lines 13-23; Fig. 2). No teaching could be found in Orton related to a controller having state information of the controlled device for any purpose, let alone for purposes of generating haptic feedback.

Yavetz is directed to a multi-vehicle interactive combat game, in which each user operates a remote control device to control a fleet of vehicles (e.g., tanks). Each tank has an infrared sensor panel to detect infrared beams fired by other tanks. When a hit is detected, "the sensor panel generates a signal which is utilized by a microprocessor incorporated in the tank 16 to adversely affect some operation of the tank for simulating damage thereto" (col. 7, lines 24-27). That is, information from the sensors in the device are used within the device. Thus, Yavetz also fails to teach or suggest a controller having state information of a controlled device for any purpose.

Helbing is directed to a device for improving the handling of remote-controlled model vehicles. A sensor is provided in the vehicle to detect rotational velocity or lateral acceleration (col. 2, lines 47-50). The sensor output is used within the vehicle as a "disturbance variable" (col. 2, lines 49-50). Steering and/or speed signals ("command variables") received from the remote control device are modified based on the disturbance variable (col. 2, lines 58-64), and the modified signals are used to control the vehicle (col. 3, lines 4-7). Again, the sensor signals are only used in the controlled device. There is no teaching or suggestion related to a controller having state information of a controlled device for any purpose.

In summary, it is respectfully submitted that none of the cited references teaches or suggests a remote control device including a controller that determines actuator signals based at least in part on a state of the device being controlled. Thus, neither Levin alone nor a combination of Levin with teachings of any of the four secondary references (Ogata, Orton, Yavetz, or Helbing) would suggest a device having this feature. Therefore, Applicant respectfully requests withdrawal of the rejection of

claims 1, 4-6, 10, and 13 under 35 U.S.C. §102(e) and withdrawal of the rejections of claims 3, 8, 9, 11, 12, 21, and 24-30 under 35 U.S.C. §103(a).

New Claims

Claims 37-44 have been added by this amendment to more adequately claim various features of the invention. Applicant respectfully submits that support for these claims may be found in the specification. In particular, support for claims 37, 38, 40, and 41 may be found, e.g., at p. 10, line 7 to p. 11, line 24. Support for claims 39 and 42 may be found, e.g., at p. 11, line 28 to p. 13, line 2. Support for claim 43 may be found, e.g., at p. 13, lines 10-17, and support for claim 44 may be found, e.g., at p. 13, line 24 to p. 14, line 10.

In order to expedite prosecution, Applicant respectfully submits that claims 37-39 are patentable over the cited reference at least because of their dependence from claim 1 and that claims 40-44 are patentable over the cited references at least because of their dependence from claim 21.

CONCLUSION

In view of the foregoing, Applicant believes all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,

MAY 3, 2002
Date

Philip H. Albert
Reg. No. 35,819

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, 8th Floor
San Francisco, California 94111-3834
Tel: (415) 576-0200
Fax: (415) 576-0300
PHA:elc
SF 1351135 v1

VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (Amended Once) A haptic feedback remote control device for providing control signals to a toy device to control the operation of said toy device, the control device comprising:

a housing;

at least one control for manual manipulation by said user, wherein said control signals representing said manipulation are sent to said toy device to control said operation of said toy device;

an actuator coupled to said housing, said actuator outputting forces on said housing or said at least one control in response to received actuator signals; and

a controller electrically coupled to said actuator, said controller providing said actuator signals to said actuator and monitoring said control signals representing said manipulation of said at least one control, wherein said controller determines said actuator signals based at least in part on **[said manual manipulation of said at least one control by said user]** a state of said toy device.

3. A haptic feedback remote control device as recited in claim 1 wherein said forces are output on said housing, wherein said actuator moves an inertial mass to provide inertial haptic sensations on said housing, said inertial haptic sensations being felt by said user.

4. A haptic feedback remote control device as recited in claim 1 wherein said force are output on said at least one control, wherein said at least one control includes a lever movable along an axis.

5. A haptic feedback remote control device as recited in claim 1 wherein said control signals sent to said toy device are transmitted wirelessly to said toy device.

6. A haptic feedback remote control device as recited in claim 5 wherein said control signals are transmitted as RF signals.

8. (Amended Once) A haptic feedback remote control device as recited in claim **[7]** 39 wherein said state information received from said toy device includes information from a contact sensor on said toy device, said information indicating whether said toy device has contacted with another object at a location of said contact sensor.

9. A haptic feedback remote control device as recited in claim 8 wherein said information indicates a degree of contact of said toy device with said other object.

10. (Amended Once) A haptic feedback remote control device as recited in claim **[7]** 39 wherein said state information received from said toy device includes **[indicates]** an amount of acceleration experienced by said toy device in at least one dimension of said toy device.

11. A haptic feedback remote control device as recited in claim 1 wherein said at least one control manipulated by said user includes a throttle control that determines a speed of travel of said toy device, wherein a magnitude of said forces is correlated with a setting of said throttle control.

12. A haptic feedback remote control device as recited in claim 1 wherein said at least one control manipulated by said user includes a turning control that determines a direction of travel of said toy device, wherein a magnitude or frequency of said forces is correlated with a setting of said turning control.

13. A haptic feedback remote control device as recited in claim 1 wherein said toy device is a toy car.

21. (Amended Once) A haptic feedback remote control device for providing control signals to a toy device to control the operation of said toy device, the control device comprising:

housing means;

at least one control means for manual manipulation by said user, wherein said control signals representing said manipulation are sent to said toy device to control said operation of said toy device;

actuation means for outputting forces on said housing means or said control means in response to received actuator signals; and

control means for providing said actuator signals to said actuator and for monitoring said control signals representing said manipulation of said at least one control, wherein said **[controller]** control means determines said actuator signals based at least in part on **[said manual manipulation of said at least one control means]** a state of said toy device.

24. (Amended Once) A haptic feedback remote control device as recited in claim **[22]** **42**,wherein said state information received from said toy device includes information from contact sensor means on said toy device, said information indicating whether said toy device has contacted with another object at a location of said contact sensor means.

25. (Amended Once) A remote control toy device providing haptic feedback to a user, the toy device comprising:

a remote control unit for providing control signals, said remote control unit including:

a housing,

a control manually manipulable by said user,

an actuator coupled to said housing, said actuator outputting forces on said housing or on said control in response to received actuator signals, and

a controller operative to provide said actuator signals to said actuator and to monitor said control signals representing said manipulation of said at least one control; and

a toy device operable to physically move in accordance with said control signals received from said remote control unit,

wherein said controller determines said actuator signals based at least in part on a state of said toy device.

26. (Amended Once) A remote control toy device as recited in claim 25, wherein said controller determines said actuator signals based at least in part on a state of said toy device inferred from said manual manipulation of said control.

27. A remote control toy device as recited in claim 25 wherein said toy device further includes a sensor for determining an interaction or action of said toy device, wherein information representative of said interaction or action is sent to said remote control unit.

28. A remote control toy device as recited in claim 27 wherein said sensor detects contact of said toy device with another object, wherein said information informs said remote control unit of said contact.

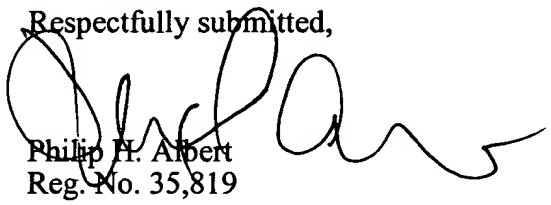
29. A remote control toy device as recited in claim 28 wherein said sensor detects a degree of contact of said toy device with another object, wherein said information informs said remote control unit of said degree of contact.

30. A remote control toy device as recited in claim 27 wherein said sensor is an accelerometer that detects an acceleration on said toy device, wherein said information informs said remote control unit of said acceleration.

This IDS is being filed after the mailing date of the first Office Action and more than three months after the filing date, but prior to the Notice of Allowance or Final Office Action.

Please deduct $180.00, pursuant to 37 CFR §1.17(p), from the undersigned's Deposit Account No. 20-1430. Please deduct any additional fees from, or credit any overpayment to, the above-noted Deposit Account.

Respectfully submitted,



Philip H. Albert
Reg. No. 35,819

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, 8th Floor
San Francisco, California 94111-3834
Tel: 415-576-0200
Fax: 415-576-0300
PHA/llc

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